



PATENT  
Attorney Docket No. OPHD-06331

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: John A. Kink

Serial No.: 09/832,233

Group No.: 1617

Filed: 04/10/01

Examiner: Sharareh, S.

Entitled: **Prevention and Treatment of Necrotizing  
Enterocolitis**

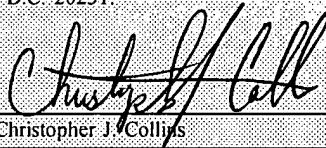
## INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

### CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8(a)(1)(i)(A)

I hereby certify that this correspondence (along with any referred to as being attached or enclosed) is, on the date shown below, being deposited with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.

Dated: March 20, 2003

By: 

Christopher J. Collins

Sir or Madam:

The citations listed below, copies attached, may be material to the examination of the above-identified application, and are therefore submitted in compliance with the duty of disclosure defined in 37 C.F.R. §§ 1.56 and 1.97. The Examiner is requested to make these citations of official record in this application.

The following printed publications are referred to in the original body of the specification as filed:

- U.S. Pat. 4,124,598<sup>1</sup> to Hearst *et al.*;
- U.S. Pat. 4,169,204 to Hearst *et al.*;
- U.S. Pat. 4,196,281 to Hearst *et al.*;
- U.S. Pat. 4,727,027 to Wisehahn;
- U.S. Pat. 4,748,120 to Wisehahn;

<sup>1</sup> The patent number was inadvertently cited incorrectly in the application as filed as 4,124,589, the correct patent number as stated in this document and the 1449 is 4,124,598.

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02 FC:1806

- Alter H.J., *et al.* "Photochemical decontamination of blood components containing hepatitis B and non-A, non-B virus." *Lancet.* Dec 24-31;2(8626-8627):1446-50 (1988);
- Birk D., *et al.* "Is the elimination of endotoxin and cytokines with continuous lavage an alternative procedure in necrotizing enterocolitis?" *Acta Paediatr Suppl.* 396:24-6 (1994);
- Black T.L., *et al.* "Necrotizing enterocolitis: improving survival within a single facility." *South Med J* 82:1103-1107 (1989);
- Caplan M., *et al.* "The role of recombinant platelet activating factor acetylhydrolase in a neonatal rat model of necrotizing enterocolitis." *Pediatr Res.* 42:779-783 (1997);
- Cimino G.D., *et al.* "Psoralens as photoactive probes of nucleic acid structure and function: organic chemistry, photochemistry, and biochemistry." *Annu Rev Biochem.* 43:1151-93 (1985);
- Eibl M.M., *et al.* "Prevention of necrotizing enterocolitis in low-birth-weight infants by IgA-IgG feeding." *N Engl J Med.* 319:1-7 (1988);
- Fast C.H., Rosegger H. "Necrotizing enterocolitis prophylaxis, oral antibiotics and lyophilized entero bacteria vs oral immunoglobulins." *Acta Paediatr Suppl* 396:86-90 (1994);
- Gonzalez-Cruzz F., Hsueh W. "Experimental model of ischemic bowel necrosis." *Am J. Pathol* 112:127-135 (1983);
- Hearst, *et al.* "The reaction of the psoralens with deoxyribonucleic acid." *Q Rev Biophys.* Feb;17(1):1-44 (1984);
- Hilfenhaus, *et al.* "A strategy for testing established human plasma protein manufacturing procedures for their ability to inactivate or eliminate human immunodeficiency virus," *J. Biol. Stand.* 15:251-263 (1987)<sup>2</sup>;
- Holman R.C., *et al.* "Necrotizing enterocolitis mortality in the United States, 1979-85." *AJPH* 79(8):987-9 (1989);

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<sup>2</sup> This citation was incorrectly cited in the application as filed. The citation contained in this document and the 1449 is correct.

- Horowitz B., *et al.* "Inactivation of viruses in labile blood derivatives. I. Disruption of lipid-enveloped viruses by tri(n-butyl)phosphate detergent combinations." *Transfusion*. Nov-Dec;25(6):516-22 (1985);
- Hsueh W., *et al.* "Interaction of inflammatory cytokines, bacterial products, and lipid mediators in intestinal injury." In: *Cytokines in Health and Disease* (2d Edition, eds. Remeck Daniel G & Friedland, J.) Marcel Dekker, Inc. NY, NY. pg. 427-443. (1997);
- Hsueh W., *et al.* "Platelet activating factor: an endogenous mediator for bowel necrosis in endotoxemia." *FASEB J.* 1:403-405 (1987);
- Issacs S.T., *et al.* "Synthesis and characterization of new psoralen derivatives with superior photoreactivity with DNA and RNA." *Biochemistry*. Mar 22;16(6):1058-64 (1977);
- Kliegman R.M., Fanaroff A.A. "Necrotizing enterocolitis." *N Engl J Med*. 3210:1093-1103. (1984);
- Kosloske A.M. "Epidemiology of necrotizing enterocolitis." *Acta Paediatr. Suppl.* 396:2-7 (1994);
- Kosloske A.M. "A unifying hypothesis for pathogenesis and prevention of necrotizing enterocolitis." *J Pediatr* 117:S68-S74 (1990);
- Lin L., *et al.* "Use of 8-methoxysoralen and long-wavelength ultraviolet radiation for decontamination of platelet concentrates." *Blood*. Jul;74(1):517-25. (1989);
- Mathew, N., *et al.* Lymphokines and Interferons, a Practical Approach. Oxford, England; Washington, DC: IRL Press. Ch. 12, pp. 221 (1987);
- Nishihira J., *et al.* "Production and characterization of specific antibodies against 1-O-alkyl-2-acetyl-sn-glycero-3-phosphocholine (a potent hypotensive and platelet-activating ether-linked phospholipid)." *J Biochem* (Tokyo). May;95(5):1247-51 (1984);
- Polson, *et al.* "Antibodies to proteins from yolk of immunized hens." *Immunol Commun*. 9:495-514. (1980);
- Stauffer U.G. "Necrotizing enterocolitis." *Acta Paediatr* 83(6):666-668. (1994);

- Sun X., Hsueh W. "Bowel necrosis induced by tumor necrosis factor in rats is mediated by platelet activating factor." *J. Clin. Invest.* 81:1328-1331 (1988);
- Tessman J., *et al.* "Photochemistry of the furan-side 8-methoxypsoralen-thymidine monoadduct inside the DNA helix. Conversion to diadduct and to pyrone-side monoadduct." *Biochemistry*. Mar 26;24(7):1669-76 (1985);
- Wolf H.M., Eibl M.M. "The anti-inflammatory effect of an oral immunoglobulin (IgA-IgG) preparation and its possible relevance for the prevention of necrotizing enterocolitis." *Acta Paediatr Suppl.* 396:37-40 (1994);
- Wolf H.M., Eibl M.M. "The relevance of immunoglobulin in the prevention of necrotizing enterocolitis." In: *Immunology of milk and the neonate* Plenum Press, NY. p.381-389. (1991) ;
- Grabstein K., *et al.* "Cloning of a T cell growth factor that interacts with the  $\beta$  chain of the interleukin 2 receptor." *Science* 264:965-8 (1994).

Applicants have become aware of the following printed publications which may be material to the examination of this application:

- Pennica D, *et al.* "Human tumour necrosis factor: precursor structure, expression and homology to lymphotoxin." *Nature* 312:724-9 (1984) describes cloning of human TNF. The paper does not disclose the treatment or prevention of neonatal necrotizing enterocolitis by administration of a therapeutic formulation of polyclonal antibodies directed to TNF.
- Grabstein K., *et al.* "Cloning of a T cell growth factor that interacts with the  $\beta$  chain of the interleukin 2 receptor." *Science* 264:965-8 (1994) describes the discovery, isolation and characterization of IL-15. The authors used PHA-activated perioheral blood mononuclear cells (PBMC) to compare binding of IL-15 with IL-2. The paper does not disclose the treatment or prevention of neonatal necrotizing enterocolitis by administration of a therapeutic formulation of polyclonal antibodies directed to TNF.

The following references were cited by the examiner in the parent case serial number 09/318,019, issued patent number 6,214,343:

- U.S. Pat. No. 5,420,253 to Emery *et al.*, describes techniques for the separation of IgG immunoglobulins from the yolk of an egg. The patent does not disclose the treatment or prevention of neonatal necrotizing enterocolitis by administration of a therapeutic formulation of polyclonal antibodies directed to TNF.
- U.S. Pat. No. 5,747,532 to Lia describes the treatment of the production of species which induce the expression of nitric oxide synthase in mammals. The patent does not disclose the treatment or prevention of neonatal necrotizing enterocolitis by administration of a therapeutic formulation of polyclonal antibodies directed to TNF.
- U.S. Pat. No. 5,847,088 to Cousens *et al.*, describes nucleic acids encoding human plasma platelet-activating factor acetylhydrolase (PAF-AH) or enzymatically active fragments thereof as well as describing antibodies reactive with human PAF-AH. The patent does not disclose the treatment or prevention of neonatal necrotizing enterocolitis by administration of a therapeutic formulation of polyclonal antibodies directed to TNF.
- Muguruma, *et al.* "Role of platelet activating factor in necrotizing enterocolitis development in the rat." *Prenat Neonat Med.* 3:571-579 (1998) describes the treatment in rat of necrotizing enterocolitis with recombinant PAF-AH. The paper also discloses that TNF-alpha facilitates the formation of necrotizing enterocolitis. The paper does not disclose the treatment or prevention of neonatal necrotizing enterocolitis by administration of a therapeutic formulation of polyclonal antibodies directed to TNF.

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This Information Disclosure Statement under 37 C.F.R. §§ 1.56 and 1.97 is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that any one or more of these citations constitutes prior art.

Dated: March 20, 2003

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FORM PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No.: OPHD-06331	Serial No.: 09/832,233
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use Several Sheets If Necessary) (37 CFR 1.98)		Applicant: John A. Kink <i>et al.</i>	
		Filing Date: 04/10/01	Group Art Unit: 1617

## U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date
	1	4,124,598	11/07/78	Hearst <i>et al.</i>	260	343.21	10/20/76
	2	4,169,204	9/25/79	Hearst <i>et al.</i>	546	270	8/28/78
	3	4,196,281	4/01/80	Hearst <i>et al.</i>	536	28	8/31/78
	4	4,727,027	2/23/88	Wischahn	435	173	10/07/85
	5	4,748,120	5/31/88	Wischahn	435	173	10/20/86
	6	5,420,253	5/30/95	Emery <i>et al</i>	530	423	9/09/93
	7	5,747,532	5/05/98	Lai	514	491	11/21/95
	8	5,847,088	12/08/98	Cousens <i>et al</i>	530	388.1	6/07/95

## OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)

9	Alter H.J., <i>et al.</i> "Photochemical decontamination of blood components containing hepatitis B and non-A, non-B virus." <i>Lancet</i> . Dec 24-31;2(8626-8627):1446-50 (1988)
10	Birk D., <i>et al.</i> "Is the elimination of endotoxin and cytokines with continuous lavage an alternative procedure in necrotizing enterocolitis?" <i>Acta Paediatr Suppl</i> . 396:24-6 (1994)
11	Black T.L., <i>et al.</i> "Necrotizing enterocolitis: improving survival within a single facility." <i>South Med J</i> . 82:1103-1107 (1989)
12	Caplan M., <i>et al.</i> "The role of recombinant platelet activating factor acetylhydrolase in a neonatal rat model of necrotizing enterocolitis." <i>Pediatr Res</i> . 42:779-783 (1997)
13	Cimino G.D., <i>et al.</i> "Psoralens as photoactive probes of nucleic acid structure and function: organic chemistry, photochemistry, and biochemistry." <i>Annu Rev Biochem</i> . 43:1151-93 (1985)
14	Eibl M.M., <i>et al.</i> "Prevention of necrotizing enterocolitis in low-birth-weight infants by IgA-IgG feeding." <i>N Engl J Med</i> . 319:1-7 (1988)
15	Fast C.H., Rosegger H. "Necrotizing enterocolitis prophylaxis, oral antibiotics and lyophilized entero bacteria vs oral immunoglobulins." <i>Acta Paediatr Suppl</i> 396:86-90 (1994)
16	Gonzalez-Cruzz F., Hsueh W. "Experimental model of ischemic bowel necrosis." <i>Am J Pathol</i> 112:127-135 (1983)
17	Grabstein K., <i>et al.</i> "Cloning of a T cell growth factor that interacts with the $\beta$ chain of the interleukin 2 receptor." <i>Science</i> 264:965-8 (1994)
18	Hearst, <i>et al.</i> "The reaction of the psoralens with deoxyribonucleic acid." <i>Q Rev Biophys</i> . Feb;17(1):1-44 (1984)
19	Hilfenhaus, <i>et al.</i> "A strategy for testing established human plasma protein manufacturing procedures for their ability to inactivate or eliminate human immunodeficiency virus," <i>J. Biol. Stand</i> . 15:251-263 (1987)
20	Holman R.C., <i>et al.</i> "Necrotizing enterocolitis mortality in the United States, 1979-85." <i>AJPH</i> 79(8):987-9 (1989)
21	Horowitz B., <i>et al.</i> "Inactivation of viruses in labile blood derivatives. I. Disruption of lipid-enveloped viruses by tri(n-butyl)phosphate detergent combinations." <i>Transfusion</i> . Nov-Dec;25(6):516-22 (1985)
22	Hsueh W., <i>et al.</i> "Interaction of inflammatory cytokines, bacterial products, and lipid mediators in intestinal injury." In: <i>Cytokines in Health and Disease</i> (2d Edition, eds. Remeck Daniel g & Friedland, J.) Marcel Dekker, Inc. NY, NY. pg. 427-443. (1997)
23	Hsueh W., <i>et al.</i> "Platelet activating factor: an endogenous mediator for bowel necrosis in endotoxemia." <i>FASEB J</i> . 1:403-405 (1987)
24	Issacs S.T., <i>et al.</i> "Synthesis and characterization of new psoralen derivatives with superior photoreactivity with DNA and RNA." <i>Biochemistry</i> . Mar 22;16(6):1058-64 (1977)
25	Kliegman R.M., Fanaroff A.A. "Necrotizing enterocolitis." <i>N Engl J Med</i> . 3210:1093-1103. (1984)

Examiner:

Date Considered:

**EXAMINER:** Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No.: OPHD-06331	Serial No.: 09/832.233
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use Several Sheets If Necessary) (37 CFR § 1.98(b)) <b>MAR 24 2003</b>		Applicant: John A. Kink	
		Filing Date: 04/10/01	Group Art Unit: 1617
OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)			
26	Kosloske A.M. "Epidemiology of necrotizing enterocolitis." <i>Acta Paediatr. Suppl.</i> 396:2-7 (1994)		
27	Kosloske A.M. "A unifying hypothesis for pathogenesis and prevention of necrotizing enterocolitis." <i>J Pediatr</i> 117:S68-S74 (1990)		
28	Lin L., <i>et al.</i> "Use of 8-methoxysoralen and long-wavelength ultraviolet radiation for decontamination of platelet concentrates." <i>Blood</i> . Jul;74(1):517-25. (1989)		
29	Matthews, N., <i>et al.</i> <u>Lymphokines and Interferons, a Practical Approach</u> . Oxford, England; Washington, DC:IRL Press. Ch. 12, pp. 221 (1987)		
30	Muguruma, <i>et al.</i> "Role of platelet activating factor in necrotizing enterocolitis development in the rat." <i>Prenat Neonat Med.</i> 3:571-579 (1998)		
31	Nishihira J., <i>et al.</i> "Production and characterization of specific antibodies against 1-O-alkyl-2-acetyl-sn-glycero-3-phosphocholine (a potent hypotensive and platelet-activating ether-linked phospholipid)." <i>J Biochem</i> (Tokyo). May;95(5):1247-51 (1984)		
32	Pennica D., <i>et al.</i> "Human tumour necrosis factor: precursor structure, expression and homology to lymphotoxin." <i>Nature</i> . 1984 Dec 20-1985 Jan 2;312(5996):724-9		
33	Polson, <i>et al.</i> "Antibodies to proteins from yolk of immunized hens." <i>Immunol Commun.</i> 9:495-514. (1980)		
34	Stauffer U.G. "Necrotizing enterocolitis." <i>Acta Paediatr</i> 83(6):666-668. (1994)		
35	Sun X., Hsueh W. "Bowel necrosis induced by tumor necrosis factor in rats is mediated by platelet activating factor." <i>J. Clin. Invest.</i> 81:1328-1331 (1988)		
36	Tessman J., <i>et al.</i> "Photochemistry of the furan-side 8-methoxysoralen-thymidine monoadduct inside the DNA helix. Conversion to diadduct and to pyrone-side monoadduct." <i>Biochemistry</i> . Mar 26;24(7):1669-76 (1985)		
37	Wolf H.M., Eible M.M. "The anti-inflammatory effect of an oral immunoglobulin (IgA-IgG) preparation and its possible relevance for the prevention of necrotizing enterocolitis." <i>Acta Paediatr Suppl.</i> 396:37-40 (1994).		
38	Wolf H.M., Eible M.M. "The relevance of immunoglobulin in the prevention of necrotizing enterocolitis." In: <i>Immunology of milk and the neonate</i> Plenum Press, NY. p.381-389. (1991)		
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EXAMINER:	Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		